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ABSTRACT

The first section of this paper which is the second on the same topic recapitulates the assessment of behavioral objectives originally stated in Part I, essentially to serve as a contrast to the "Dewey model" which states that goals should be determined "by" the students rather than "for" them, and hence that ends should not exist as fixed points external to activity, but rather should function as terminals of deliberation and turning points in activity. The second section develops the Dewey model in terms of inquiry and experience, while the third section deals with its implications for the curriculum. The report emphasizes the following curricular principles: (1) the field of study should be explored from the viewpoint of its practical problems and operations; (2) the students' own habits of inquiry and decision making should be explored, developed, and transformed; (3) students should be given areas in which they can exercise power, responsibility, and choice; and (4) the curriculum pattern should encourage pluralism and alternatives. (Author/LAA)

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A METHODOLOGY OF EXPERIENCE:

PART II, THE PROCESS OF INQUIRY

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INTRODUCTION

In an earlier paper on this topic I (1) offered a critical assessment of behavioral objectives, and (2) outlined an alternative educational model.[1] This model, which I labelled the "Dewey model," had as its prime thesis the notion that goals should be determined by the students rather than for them, and hence that ends should not exist as fixed points external to activity, but rather should function as "terminals of deliberation, and so turning points in activity."[2] In summarizing this model I remarked that much work needed to be done on it, and suggested a start be made by integrating Dewey's concept of inquiry with his notion of ends as "terminals of deliberation."[3] In this paper I would like to make that start.

The paper will be divided into three sections. The first section will recapitulate the original assessment made of behavioral objectives, essentially to serve as a contrast to the "Dewey model." The second section will develop that "Dewey model" in terms of inquiry and experience; while the third section will deal with the curriculum implications of the model.

BEHAVIORAL OBJECTIVES: A RECAPITULATION

In looking at the writings of such behavioral objectivists as Bloom, Gagné, Glaser, Krathwohl, Mager, Popham and Tyler, it quickly becomes evident these educators favor an instructional model which separates ends from means. In fact, this model is really one which concerns itself with the efficient production of previously determined ends. Mager states very clearly that his book "is not concerned with which objectives are desirable or good," but only with helping the educator specify and communicate those objectives already chosen.[4] Tyler also spends most of his time assessing means apart from ends - as is evidenced by his "four fundamental questions" - and when he does talk of ends, he either dismisses them as "matters of choice" or shrouds them in vague generalities as "desirable

norms," "standards of philosophic value," or "basic educational purposes."[5] Popham states that the act of goal-choosing is qualitatively different from the act of goal-implementing, and opts exclusively for the latter: "The purpose of goal-referenced instructional models is to achieve more efficiently whatever goals have been selected."[6]

While such a separation of means from ends is not uncommon in educational or philosophic theory, it does raise important questions - in the educational, epistemological and moral realms. Historically the separation of means from ends has tended to place the means of any operation within an empirically verifiable framework, while the ends remain in a separate class by themselves, often unrecognized, always unassailable. Tyler does just this when he begins by saying that "many educational programs do not have clearly defined purposes," or a "clear conception of goals" but then goes on to assert that goals are ultimately "a matter of choice," and can be derived from those "norms" which can be considered "desirable," "acceptable," "basic," or "standard." Popham also removes ends to this special category when he states that:

> Society knows what it wants its young to become, perhaps not with the precision that we would desire, but certainly in general.[7]

The prime difficulty with the above statements - from an educational point of view - is not the obvious one that such a means-ends separation provides a categorical shield behind which exist an individual's most cherished, unexamined and unproven prejudices. But rather the difficulty is that in placing ends in this special limbo area both the questioning and development of them are effectively removed from the educational process. Whereas in an ends-means integrated model a major part of the educational process centers around the choosing and evaluating of ends (and of means), in an ends-means separated model the process centers around the efficient production of an already determined pattern - and

it is an inquiring, dynamic, live, human learner who is being so moulded. This comes out strongly, not only in the Popham statement just given, but also in Mager's statement that:

> An objective ... is a description of a pattern we want the learner to be able to demonstrate;

and in Kibler's statement that:

> Behavioral objectives are statements which describe what students will be able to do after completing a prescribed unit ...[8]

Obviously the "pattern" in the Mager statement and the "prescribed unit" in the Kibler statement are determined <u>for</u> the student, not <u>by</u> him nor <u>with</u> him. Decision making, in terms of end choosing, is not a part of this educational model.

Ironically this model is far more teacher-centered and teaching concerned than it is learner-centered or learning concerned. That is, while the model is theoretically constructed for the "benefit" of the learner - the assumption being he can learn better when he knows precisely what it is he has to learn - such learning is actually defined in terms of teaching, thus reducing the learner to little more than a dependent and manipulative variable in a tightly structured teaching framework. As Mager says:

> I cannot emphasize too strongly the point that an instructor will function in a fog of his own making until he knows just what he wants his students to be able to do at the end of the instruction.[9]

Further, this model correlates quite well with that epistemological one which assumes knowledge to be a "thing" existing apart from the learner, developed in time previous to him, and hence unaffected by him, but transmissible to him via a "soul," "mind," or "I.Q." It also correlates with the axiological model which assumes the learner's rights (and even his abilities) to frame his own ends and purposes to be dependent upon his acquisition of "correct knowledge" in the

"correct form."[10]

In quite a number of his works Dewey objected strenuously to both the educational and philosophical variants of this fixed ends or ends-categorically-separated-from-means model. Educationally he said:

> Until educators get the independence and courage to insist that educational aims are to be formed as well as executed within the educative process, they will not come to consciousness of their own function...Such a statement will seem to many persons both absurd and presumptuous. It would be presumptuous if it had been said that educators should determine objectives. But the statement was that the educative process in its integrity and continuity should determine them. Educators have a place in this process, but they are not it, far from it... For education is itself a process of discovering what values are worthwhile and are to be pursued as objectives.[11]

In a more philosophical vein he said:

> The statement ... (is often made) ... that means and ends are separate from each other, each having its own fixed province. In reality, ends that are incapable of realization are ends only in name. Ends must be framed in the light of available means. It may even be asserted that ends are only means brought to full interaction and integration. The other side of this truth is that means are fractional parts of ends. When means and ends are viewed as if they were separate, and to be dealt with by different persons who are concerned with independent provinces, there is imminent danger of two bad results.
>
> Ends, values, become empty, verbal; too remote and isolated to have more than an emotional content. Means are taken to signify means already at hand, means accepted because they are already in common use.[12]

What Dewey is beginning to develop in this last rather long quote - and what lies at the heart of that which I've called the Dewey model of ends and means - is a contrast between his paradigm of change and the one dominant in philosophy since the time of Aristotle. In the Aristotelean paradigm all change is predetermined; as the acorn grows into the oak, so each individual realizes (under

the best of conditions) the actuality of the potentiality he has possessed since birth. The individual changes; the species does not; change is only cyclical. In the Dewey paradigm change is determined, not pre-determined; it is determined by the interaction of the individual with his environment - the individual lives not in his environment as much as he lives by means of it. There is pattern to this change, but the pattern is not fixed, nor inevitable: it is the result of past shared activities, communal interactions, and historical habits. All of these can, and do, change - some slowly, some quickly.

Within the Aristotelean paradigm of change there are certain ends, truths, realities, values, even knowledges, which exist prior to, and independent of, the cyclical potentiality into actuality process. Within the Deweyan paradigm of change there are no such absolute entities or ends above, beyond or external to the interactive process of living. All life is change of one sort or another, and within this change men develop ends (in connection with means) to give their lives greater order, direction and control. This is what Dewey means when he says " ... ends arise and function within action .... They are terminals of deliberation" which will control future activities.[13]

Educationally Dewey saw the process of schooling as being the actual practice of the individual forming his own ends, reflecting upon them, interacting with others' viewpoints about them, and finally testing them in terms of performance and consequence. This process happens somewhat naturally in ordinary living (especially societal living) but Dewey believed the process itself would be more effectively developed in a controlled, selected, hence school, situation. But - and this is the important point here - the formation of ends must be a part, not of the <u>educator's</u> task, but of the <u>educative process</u>; in fact, it should be the central focus of that process.

EXPERIENCE AND INQUIRY

Men, in fact, do form ends - it is part of the living process for the human species - but, Dewey believes, in their ordinary activities they do this in an inefficient and "gross" manner. That is, in order to produce some sort of pattern out of this "bloomin', buzzin', confusion" called life, it is necessary for men to develop hypotheses, by which they can order, select and execute various activities. But at the common sense level this process is carried out unreflectively, uncritically, and hence "grossly." It is well within the power of education to raise this process to higher, more critical, reflective and refined levels. This is accomplished not by adding something new to the original process but just by extending that process. Thus for Dewey common sense and the scientific method are different aspects of the same pattern: the pattern of inquiry.[14]

This pattern or process of inquiry is also for Dewey the methodology by which ordinary, human experience is transformed or reconstructed from that which is primarily or grossly perceived to that which is reflected upon, analyzed, and hence understood.[15] This process is definitely temporal, and to some degree sequential; that is, both felt difficulties and possible solutions arise before critical reflection and experimental testing. It is important, however, if inquiry is to be developed as a methodology, and if experience is to be transformed or reconstructed, to carry the process beyond the stage or terminal of immediate solution into the realm of scientific (or abstract) procedure. Thus Dewey outlines a number of terminals, stages, or aspects which can prove useful in focusing on various parts of the "complete act of reflective activity."[16] They are: (1) a felt difficulty, (2) institution of a problem, (3) suggestions and hypotheses, (4) abstract reasoning or systematic inference, (5) testing by action.

All thinking - at least that which is deliberate, reflective - begins, Dewey

believes, when the equilibrium of habitual action is disturbed, either through the emergence of an overt problem or the development within the person of a whim or tentative interest. In any event the harmony of a present line of activity is interrupted, discontinued, slowed down. This is what Dewey calls the "indeterminate situation," and it is felt before it is realized. At this time there is also a tendency for fixed and continued habits to assert themselves so the feeling of disequilibrium will not be realized, so a definite and defined problem will not emerge. If past habits do prevail, a problem will not develop, and the opportunity for inquiry and the development for experience will not occur. If, however, the situation is indeterminate enough or the feeling organism sensitive enough inquiry will begin. As Dewey says: "To see that a situation requires inquiry is the initial step in inquiry." Here there is "an intellectualization of the difficulty or perplexity that has been felt (directly experienced) into a problem to be solved..."[17] There is also a tendency at this time for the mind to become quite imaginative, quite spontaneous. Ends, aims, purposes are in a sort of early or beginning period; they are fancies, wishes, imaginations, but they are not yet ends in a definitional sense, for such occur only when concrete conditions for realization (means) are also developed. Ends in this sense of potentialities or possibilities emerge only in conjunction with means; and depend upon a knowledge of past causal relationships, an analysis of present conditions, and a projection of future possibilities. Now as Dewey says a wish is turned into a purpose, with a definite commitment towards specific action.

The transformation of a wish or suggestion into an end is the very heart of the third phase, that of suggestions and hypotheses. When a problem has been identified it is the nature of human thought to have ideas "pop into the head," or to "flash upon the mind." This is both a benefit and a deterrent. Such activity is a benefit for it is from these suggestions that hypotheses are made;

there is nothing intellectual about this activity - it either happens or it doesn't, suggestions either come or they don't - but they are the "primary stuff" of which logical connections and developed hypotheses will ultimately be made. That is, if the process of inquiry is continued. It is very tempting at this stage to try a number of these suggestions to see if they will become solutions to problems, or provide answers to that which was perplexing or intriguing. If at this level the emphasis is upon immediate and practical solutions, then the suggestions will not turn into hypotheses, notions will not be transformed into ideas, and inquiry will cease prematurely. As Dewey says: "When a suggested meaning is immediately accepted, inquiry is cut short. Hence the conclusion reached is not grounded, even if it happens to be correct." This is a point realized by exceptionally few teachers; certainly it is not part of the programmed instruction framework, nor of specifically stated behavioral changes. It was, probably, the greatest single mistake Kilpatrick made in interpreting Dewey's concept of "problem-solving."[18]

The next phase, the fourth, that of reasoning, is for Dewey the key one in the transformative or reconstructive process. For it is at this stage that ideas are related directly to one another and not dependent upon sense experience. Here practical suggestions and hypotheses are put within an abstract framework of already logically connected ideas, and traced out for their validity, implications, and logicalness. From this arises the directive force which any strong hypothesis should have and logically must have to be definitionally an hypothesis. As Dewey says:

> An hypothesis, once suggested and entertained, is developed in relation to other conceptual structures until it receives a form in which it can instigate and direct an experiment that will disclose precisely those conditions which have the maximum possible force in determining whether the hypothesis should be accepted or rejected.[19]

The epitome of this activity is, of course, mathematical reasoning. In fact it is mathematical reasoning which has allowed science to make the great advances it has. But Dewey warns it is not quantification or formulization per se which is essential to mathematical reasoning; rather, it is the opportunity to remove ideas from the particular, to deal with them in an abstract, logical, integrative and quite imaginative way that is the essence of such reasoning. This point, Dewey says, is too often missed by educators and other social scientists attempting to copy the scientific paradigm.

Since the outstanding feature of pragmatism is its use of consequences or results as a test of validity, it is only to be expected that the final stage would return from the abstract and generalized to the specific. As Dewey says, an experiment is set up, "in accord with the requirements of the idea or hypothesis to see if the results theoretically indicated by the idea actually occur." If such results do occur - again in accord with the hypotheses laid out - then there is reason to assert that the original propositions were indeed warranted. If, however, "the idea in question is refuted by the court of final appeal" - that of controlled experimentation - then, while disappointment does personally exist and while failure has occurred, it is not as Dewey says "mere failure."

> ... a great advantage of possession of the habit of reflective activity is that failure is not <u>mere</u> failure. It is instructive. The person who really thinks learns quite as much from his failures as from his successes.

This, of course, is the real end of the inquiry process: not to achieve better results, but to develop a universal methodology whereby results can and will be achieved in an organized, logical fashion. In the individual this means the continual development of habits of reflective inquiry, or in more common terminology, the disciplining or logical training of the mind.[20] As Dewey says:

> What is important is that the mind should

> be sensitive to problems and skilled in methods of attack and solution;

(for)

> (t)he trained mind is the one that best grasps the degree of observation, forming of ideas, reasoning, and experimental testing required in any special case, and that profits the most, in future thinking, by mistakes made in the past.

In looking at this process of inquiry in its totality it is easy to see that it begins with the non-cognitive - with that which is felt or sensed - develops certain cognitive aspects, which are then transformed to a more abstract, symbolic and imaginative level, and finally concludes with a return to the practical, particular, and experiential. In this way Dewey integrates the theoretical with the practical, or in his own words, develops "the theory of practice." A major part of this "theory of practice" is not only the integration of the cognitive with the non-cognitive, but also of the two levels of cognition with each other. The first level is that characterized by suggestions "popping into the head"; it is rather automatic, occurs without much training or experience, is limited (instrumentally) to bodily sense organs or rather crude apparatus, and aims generally towards the practical utility of solving an immediate problem. However, it is also the "stuff" out of which the second level, that of reasoning, is made. As the first level is common sense and problem oriented, so the second level is scientific and inquiry oriented; that is, inquiry is studied and developed as a general methodological process. This process will ultimately be used to solve the particular practical problems which gave rise to the inquiry process - and such a solution is the final test of the validity of the process - but in the intermediate stages hypotheses and ideas will be developed which will lead to better observations, new and better instrumentalities, and even a transformation of the process itself. Dewey sums up some of this in the following statement:

> The operations of common sense are restricted because of their dependence upon limited instrumentalities, namely, bodily organs supplemented by instrumental apparatus that was invented to attain practical utilities and enjoyments rather than for the sake of conducting inquiry.... Competent science begins when the instrumentalities employed in operations of inquiry are adapted and invented to serve the purpose of inquiry as such, involving development of a special language or set of symbols.[21]

The point being made here, in regard to this second level of cognition - that of reasoning and abstraction - is that by examining an idea in relation to an already established "set of interactions" (as is done in mathematics, logic, and many of the physical sciences) the idea is transformed from a gross level to a more refined one, and with that transformation come new observations, a better train of thought, and generally a more sophisticated quality of awareness and experience. So far such a process has been applied only to the physical sciences, where Copernicus' theories led to - or at least helped create a need for - Gallileo's telescopes and Kepler's mathematical advances. These in turn led to an even further sophistication of the scientific process and the multiple increase of practical discoveries. This general methodological model, however, could be applied to all human areas.[22] That was Dewey's great hope and faith.

CURRICULUM IMPLICATIONS

What Dewey has done in his inquiry-experience model is to prove (or assume) a strong connection between common sense inquiry and scientific inquiry. In fact, he sees the latter as but an extension and outgrowth of the former. This connection is important for an understanding of Dewey's concept of education, as well as for an understanding of his concept of science and scientific methodology. To appreciate better the particular connotations Dewey places upon this process he calls "inquiry," and hence to envision the curriculum implications which can be derived from it - but which Dewey never spells out - it might be useful to at

least glance at the concept of inquiry as it is used by two other theorists. A corollary benefit of this comparison will be (hopefully) a greater awareness of the strong educational feeling and concern which pervades all of Dewey's major writings, including his later, more philosophical ones.

Thomas Kuhn, a philosopher of science, believes that while a few (very few) scientists do inquire in a bold and imaginative way, the vast majority inquire into small, detailed problems set up by others. Thus the activity of "normal science" consists essentially of "mopping-up," "puzzle-solving," or precise articulation operations "of those phenomena and theories" supplied by others.[24] While such work is essential to scientific progress, and not without its own fascination - allowing theories to be applied to esoteric areas, and tested in depth and detail - it is still of routine nature, and narrow and limiting in its focus. Preparation for such inquiry does not require so much of Dewey's notion of end-in-view, nor reflective thinking, as it requires textbook drill, puzzle-solving practice, and a long and closely supervised apprenticeship. This is in no way to disparage either the training a scientist receives, or the task he performs. Scientists do have degrees of freedom, creativity, imagination, and the problems they work on are unique, challenging, and useful. But these problems are of someone else's choosing, and the theories, instrumentalities, hypotheses and findings of research are all controlled by the general paradigm accepted by the senior or leading members of the scientific community. Thus in analyzing both Kuhn and Dewey it is obvious that Dewey's concept of inquiry is not the one Kuhn believes is prevalent in scientific circles; and that Dewey's model of education as a methodology designed to reconstruct experience (and hence continually to lead to growth) is of a vastly different kind from that training received by the prospective scientist.[25]

Whereas Thomas Kuhn talks about scientific inquiry in terms of the activity

of the physical scientist, Joseph Schwab - a scientist and educationist - talks about it in terms of the patterns used by the behavioral or social scientist.[26] At least partly recognizing Kuhn's point that the physical sciences depend upon consensus, while no such consensus seems possible in the social or behavioral areas, Schwab does believe the pluralistic approaches used in the behavioral field to be "few in number and capable of formulation."[27] To be exact he sees five, and a possibility of only five. The reductionist approach emphasizes the reducing of explanations to one causal factor or a set of causal factors - i.e. stimulus-response.[28] The holistic approach emphasizes a definite whole, constituted of interacting parts - i.e. modern concepts of either the atom or democracy - with the whole greater than the parts in summation. The ratio approach sees a ratio between any subject being studied and a "larger determinative whole ... imposed from without" - i.e. Plato's concept of the individual as society writ small, or Lewin's concept of a psychological field. The anti-principle approach assumes "facts" to exist independently and objectively of any man-made organizing principles. Hence inquiry is merely investigation into "what is." There is a one-to-one correspondence here between "facts" and "reality." A more primitive approach to inquiry derives its impetus from common sense and ad hoc methods of organization - i.e. current investigations of cancer. While this last approach has a certain similarity with Dewey's concept of inquiry it is a great deal more randomized, external goal-oriented, and "practical" than is Dewey's.

The purpose of the foregoing explication was not to describe the nature of scientific inquiry, but to provide support for the assertion that Dewey's concept of inquiry is allied more with educational inquiry than with scientific inquiry. Whereas both Kuhn and Schwab were discussing the operations of practicing scientists doing a professional task Dewey was describing the development of human experience and particularly a methodology designed to make that experience richer

and fuller, in terms of both perception and conception. Thus Dewey says:

> ... the real problem of intellectual education is the transformation of natural powers into expert, tested powers: the transformation of more or less casual curiosity and sporadic suggestion into attitudes of alert, cautious, and thorough inquiry.[29]

It is not uncommon for Dewey's critics to miss this point[30] and assume that with his frequent mention of science and scientific methodology Dewey was advocating the use of professional scientific inquiry as a model for human thinking. Nothing could be further from the truth! As Kuhn has pointed out normal science is the routine of solving individual puzzles or problems; for Dewey this is a step which cuts off inquiry and hence leaves experience at the gross or unrefined stage. He would want, in Kuhn's terminology, the process to continue to the point where the very structure of the paradigm itself would be questioned. But that is just what does not happen in normal science, nor in the average classroom. As Dewey says:

> (The principle of inquiry is violated) when emphasis falls chiefly on getting the correct answer. Then the recitation tends to become a guessing bee as to what the teacher is really after.[31]

Such an emphasis, though, is the prime one in any system which sets pre-determined, fixed or narrow ends. The very nature of the process is then concerned with the attainment of those ends, and, as inquiry is cut short, education is limited.

Dewey's model of experience and inquiry is essentially one of experimental or instrumental thinking in which ideas act as intermediaries "between an earlier, less organized, more confused and fragmentary sort of experienced subject matter and one more ordered, clearer, freer, richer, and under better control as to its outcome."[32] This model is both general and personal: it is general in that the pattern of inquiry is applicable to all human thought; it is personal in that

the pattern of developing experience centers very heavily around the personal aspects of experience. It is a scientific model in that it substitutes experimentation for a priorism and deliberate modification for transcendent "rational intuitions, revelations from on high," and adherence to established traditions and authorities.[33] However, in its insistance on the continual reconstruction of all personal experience, for all people, in all areas of human activity, it is essentially an educational model more than anything else. But as an educational model it has received scant attention and very little development; while as a model for scientific practice it is far too general to be in anyway useful.[34]

The most obvious, and most general, curriculum implication which can be drawn from Dewey's inquiry-experience model is that education should primarily be concerned with the orderly development of the process of thought. Thus he says:

> It is evident that education is primarily concerned with thinking as it actually takes place in individual human beings. It is concerned to create attitudes favorable to effective thought.

(and):

> ... while we cannot learn or be taught to think, we do have to learn how to think well, especially how to acquire the general habit of reflection.[35]

While at first glance few educators, of most any persuasion, would disagree with the above statements, the great majority would not, and have not implemented it the way Dewey would. For Dewey the key phrases (above) are "individual human ... attitudes," and "general habit of reflection." He does not believe "the practice of thinking in accordance with some logical formula results in creation of a general habit of thinking." Rather he believes the general habit of thinking to be innate and its development to depend partly upon individual attitudes, partly upon methodological forms. But he keeps his forms (the five aspects of reflective

thought) most general and non-serial because, if given a choice between attitude and form, he would choose attitude:

> If we were compelled to make a choice between personal attitudes and knowledge about the principles of logical reasoning together with some degree of technical skill in manipulating special logical processes, we should decide for the former.[36]

But this choice is just the opposite of that made in the overwhelming majority of curriculum or behavior models. They are concerned essentially with the product produced, and have assumed that drill in methods of achieving that product will - not only attain the narrow goal specified, but - somehow lead to the "general habit of reflective thinking." Dewey, on the other hand, believes the general habit of reflective thinking will lead to superior product performance in a variety of individualized instances. Thus his inquiry-experience model emphasizes, not the product of thought, but the habit of thinking. This emphasis, in turn, means a personal involvement in the choosing of ends, experiencing of consequences, and development of alternatives, not found in most curriculum or behavior models.[37]

[The Nature and Role of Hypotheses]

In most curriculum models major attention is paid to the definition and arrangement of specific subject-matter. However, in the inquiry-experience model this attention is shifted to "the role of hypotheses ... (and) the necessary place they occupy in every intellectual operation."[38] In short, the shift in emphasis is from an educational model designed to "teach" (or have the learner learn) efficiently a given set of material, to one designed around the construction, development and testing of hypotheses. As Dewey has said, hypotheses are not fixed or final (or pre-determined) truths; they are "working ideas", and as such they are not provided, but constructed or developed.[39] They arise naturally out

of an individual's active involvement with his environment, but in their embyronic form they are no more than whims, fancies, musings, or suggestions. To be developed into hypotheses, ends-in-view, purposes or aims, these whims, fancies, musings or suggestions must go through a transformative process based on real choice, followed by causal and received consequences. The word "real" is appended to the word "choice" here because there is a tendency today to construct educational models which offer the individual the opportunity to choose from a variety of pre-set alternatives. Such a limitation does not allow for the construction of choice,[40] and unless choice be constructed, man's unique ability to abstract, to imagine, to create is not brought into play; nor is his degree of personal involvement nearly so great.

The educational situation should then be so structured that the individual is actually encouraged to make as many choices as is feasible with his age, the subject being studied, and his own personal sense of being. However, if the choice is to be something other than mere fancy - if indeed this choice is to be constructed - then there needs to be development of the act of choosing, and that means a connection between choice and consequence. An end-in-view acquires its power to be an end - to direct future activity towards a desired consequence - only as the means available to achieve the end come into play. Up to that time the end is the same as a whim or imagination. This is what Dewey means by saying that ends arise out of activity - do not precede it - and are turning points (or controlling foci) within activity. Within this process of emergent ends integrated with available or possible means, it is necessary to: (1) have enough control over the situation and logical methods of operation that a causal connection between hypothesis and consequence can be warranted, and (2) carry the process far enough forward into practical activity that actual consequences do result.[41] As Dewey says, in a very meaningful but poorly written passage:

> One of the chief causes for failure in school to secure that gain in ability to understand that is a precious educational result is the neglecting to set up the conditions for active use as a means in bringing consequences to pass - the neglecting to provide projects that call out the inventiveness and ingenuity of pupils in proposing aims to realize, or finding means to realize, consequences already thought of. All routine and all externally dictated activity fail to develop ability to understand, even though they promote skill in external doing. Too many so-called 'problems,' in reality assigned tasks, call at best simply for a kind of mechanical dexterity in applying set rules and manipulating symbols. In short, there is a challenge to understanding only when there is either a desired consequence for which means have to be found by inquiry, or things are presented under conditions where reflection is required to see what consequences can be effected by their use.[42]

This carrying forward of an idea into consequential results in practical action is not only a distinguishing feature of Dewey's pragmatism, but the underlying meaning of the newly re-discovered Greek word, "praxis."[43] In this process, ideas (as working ideas) not only control the course of future developments, but as they are integrated with means (for the ultimate production of results) they acquire, themselves, new meanings and hence undergo a transformation. This transformation is the reconstruction of experience, or what Dewey calls growth. In it the ideas transform the experiences, and are themselves transformed from wishes or imaginings into hypotheses. Of all the educators and/or educational theorists writing on Dewey or making Deweyan models, the only one giving evidence of having grasped this methodology is Joseph Schwab.

Schwab believes, as he says, curricula and the field of curriculum to be "moribund." The cause of this is an "inveterate and unexamined reliance on theory," and the cure is to divert curriculum energies "from the theoretic to the practical."[44] Both "theoretic" and "practical" are words used in a Deweyan sense. Schwab's objections to reliance on the theoretic for curriculum (or schooling)

models are two: first, the very nature of theory is that it abstracts and generalizes, moving away from the unique idiosyncrasies of a particular situation to idealized regularities. Indeed such abstraction and generalization is helpful for concrete decision making, but only in the sense of providing guidance and direction, not in the sense of a rule or formula to be dogmatically imposed or followed.[45] Schwab's second objection is that theoretic developments in the field of education have not dealt with the nature of educational problems but have been borrowed from other fields - notably psychology. Further, humans are themselves so complex, and their interactions with their environment and others so diverse and changing, that Schwab doubts any attempt at a general theoretical hierarchy will be productive. Rather he believes a new approach to curricula questions must be developed, one which deals with the practical art of deliberation and decision making. Thus, as Schwab says:

> ... real cases are not mere instances of general rules or mere members of classes... classes and rules are neat abstractions from the real and real cases seen in terms of rules and classes are confused and complex...the application of principles to problems of choice and decision ... requires its own art, the art of deliberation, involving the envisaging of alternatives, the weighing of alternatives, and the rehearsal of probable consequences.[46]

This is very much akin to (and indeed an extension of) Dewey's later stages of inquiry, and to his notion of "a theory of practice."

If the educational process is to move away from the presentation of theoretic structures which the student is to learn into a study and development of the practical art of deliberation and decision making, then Schwab sees four areas that need exploration and emphasis.[47] First, the field of study needs to be explored, not from the viewpoint of its idealized form and function, but from the viewpoint of its practical problems and operations. This could be accomplished by doing away with textbooks and substituting contemporary monographs, newspaper

accounts, or commission reports, and prime sources in general. In some areas actual observation and work in the field could be integrated with study of the field. Arrangements could also be made for the students to observe (and interact with) the teachers, professors, and experts in the field interacting with each other.

Second, the students' own already formed habits of inquiry and decision making need to be explored, developed and transformed. Schwab calls this a disciplined habit of intelligence - "the pattern of search, analysis, and articulation of meaning" - and gives an example for illustration:[48]

> A female government employee in peacetime has given some secret (but non-useful) information to her spy boyfriend. She has admitted her guilt and is to be sentenced by the judge. What sentence should he impose?

The students are asked for their decisions and the reason for those decisions. Naturally a variety of sentences and reasons would be expected - i.e. five years in prison as an example for others contemplating treason, suspended sentence due to the nature of the girl's infatuation for the boy, and the fact that the documents were of no value. Schwab then suggests that the instructor discuss, not the merits for these choices, but the reasons underlying them. Thus the students choosing a long sentence for example - setting are operating under the tacit (but rarely examined assumption) that punishment will act as a deterrent to others. Empirical evidence could be gathered on this question, and the students' own thinking strengthened. Those opting for a suspended sentence also are operating on certain tacit, but far less clear (and maybe quite varied), assumptions. Again Schwab feels these assumptions should be explored that the students' thinking might be more clearly analyzed, developed and hence transformed.[49]

Third, the students need to be given areas and activities in which they can exercise (and hopefully develop) power, responsibility, and choice; and the

situation should be so constructed that they would live with the consequences of their decisions. Schwab sees this area as one of the schools' present greatest lacks; students are denied any real decision making power or responsibility, and denied the opportunity of experiencing the consequences of their own actions. Schwab's hope here is that in placing the students within a decision-making/consequence-receiving situation (along with a study of the field, and their own methods of decision making) they will learn the practical arts of compromise and consensus. That is, they will experientially realize that each situation has its own unique factors, and while study of those factors is vitally necessary, the actual act of decision-making must be done in conjunction with others, and in accord with various emphases being placed upon those factors. (Here the case of the girl being sentenced is illustrative: none of the sentences were "wrong;" they just assigned different weights to the various factors in the case.)

Fourth, the overarching curriculum pattern (to whatever degree there is <u>one</u>) should be that of a "polyfocal conspectus." That is the encouragement of pluralism and the positive advantages of pluralism; that through pluralism there is the opportunity to garner more insights into the complex construction of practical situations. Such an approach would encourage the development and analysis of alternatives and hence give incentive to man's powers of creativity and imagination, while at the same time maintaining a disciplined approach to inquiry and the transformation of experience.

The question, Dewey said, is:

> Whether inquiry can develop in its own ongoing course the logical standards and forms to which further inquiry shall submit?[50]

Footnotes

1. William E. Doll, Jr., "A Methodology of Experience: An Alternative to Behavioral Objectives," Educational Theory (in press, 1972).

2. Ibid., p. 18. The quote is originally from John Dewey's Human Nature and Conduct (New York: The Modern Library, 1922, 1957), p. 207; and it runs:

> Consequently ends arise and function within action. They are not, as current theories too often imply, things lying beyond activity at which the latter is directed. They are not strictly speaking ends or termini of action at all. They are terminals of deliberation, and so turning points in activity.

3. Ibid., p. 30.

4. Robert F. Mager, Preparing Instructional Objectives (Palo Alto, California: Fearon Publishers, 1961), opposite p. 1.

5. Ralph Tyler, Basic Principles of Curriculum and Instruction (Chicago: University of Chicago Press, 1950), pp. 1, 3 and 6. Tyler's "four fundamental questions" are:
   1. What goals should a school seek?
   2. What means should it use?
   3. How should these means be organized?
   4. How should the effectiveness of these means be evaluated?

6. James Popham, "Objectives and Instruction." AERA Monograph Series on Curriculum Evaluation, No. 3: Instructional Objectives, 1969, p. 38. His distinction between the choosing and the implementing of goals is made in his statement that:

> ...the determination of what the instructional goals should be is essentially a curricular, not an instructional, decision.

7. James Popham, "Probing the Validity of Arguments Against Behavioral Goals," in Robert Kibler, Larry Barker and David Miles, Behavioral Objectives and Instruction (Boston: Allyn and Bacon, 1970), p. 119.

8. The Mager statement is from page 3 of his Preparing Instructional Objectives, while the Kibler statement is from page 1 of his Behavioral Objectives and Instruction.

9. Mager, Preparing Instructional Objectives, p. 3. The main point here is not that an instructor becomes better the less clear is his notion of goals and purposes, but that in removing the student from this goal-choosing process the interactive qualities between the learner and his environment are also removed (or at least reduced) and in their place are substituted passive and receptive qualities (those of obedience to authority, non-questioning, etc.). See Morris Bigge, "Experimentalism and Learning Theory," The Record, Vol. 71, No. 3 (February, 1970).

10. Explications of these models are many. Peter Collins has one in The Record (February, 1970), "Some Philosophical Reflections on Teaching and Learning"; G.K. Plochman has one in the Journal of General Education (April, 1959), "On the Organic Logic of Teaching and Learning"; And Kingsley Price has a rather classic one in The Harvard Educational Review (Fall, 1958), "On Having

an Education." Objections to, and analyses of, this view can be found in Isreal Scheffler's "Comment" in Chapter Two of Brauner and Burns' Problems in Education and Philosophy (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1965); and in Chapter Two of Paulo Freire's Pedagogy of the Oppressed (New York: Herder and Herder, 1970).

11. John Dewey, The Sources of a Science of Education (New York: Horace Liveright, 1929), p. 74.

12. Ibid., p. 59.

13. For more on Dewey's concept of change, as well as his historical assessment of prior philosophers' conceptions of it, see my dissertation, "An Analysis of John Dewey's Educational Writings Interpreted with Reference to his Concept of Change," (Johns Hopkins University, 1972). The quote, already given once, is from Dewey's Human Nature and Conduct, p. 207.

14. In his Logic: The Theory of Inquiry, Dewey devotes two chapters-- the fourth and the sixth-- to explication and "proof" of the following statement:

> ...inquiry, in spite of the diverse subjects to which it applies, and the consequent diversity of its special techniques has a common structure or pattern...(and) this common structure is applied both in common sense and science...

See John Dewey, Logic: The Theory of Inquiry (New York: Holt, Rinehart and Winston, 1938), p. 101.

15. For more on this transformation of experience see my "An Analysis of John Dewey's Educational Writings Interpreted with Reference to his Concept of Change," Chapters 2, 3 and 8; also Dewey's Experience and Nature (New York: Dover Publications, Inc., 1929, 1958), pp. 1a-6.

16. Because Dewey wishes to preserve the totality of this act in its integrative and interactive complexity he shifts the numbers, labels, and ingredients of the various stages or aspects. Essentially his categorization (again artificially done for analytic purposes) revolves around the number five. In both editions of How We Think (1910, 1933), and in the Logic these categories are outlined. In keeping with Dewey's own model my description and analysis will freely intermix all these works. Reference to the Logic has been cited, the 1910 How We Think will be that of (Boston: D.C. Heath and Company), while the 1933 edition will be (New York: Henry Regnery Company, 1971).

17. As was stated in the prior footnote these quotes and categorizations are intermixed from both versions of How We Think (1910), pp. 72-78; How We Think (1933), pp. 106-118; Logic, pp. 104-118. Since these pages are few in number, the material in each book generally the same, specific quotes will not be specifically referenced. The inquiring reader can search them out for himself with little difficulty.

18. The phrase "problem-solving" is, of course, more Kilpatrick's than Dewey's. In listing the five steps a child should follow to produce a "new behavior pattern" (a phrase more Thorndikean than Deweyan) Kilpatrick assumes that experience becomes reconstructed when an individual, practical and highly

mechanical act is completed. As Kilpatrick says:

> ... I should like to recall that this boy who yesterday could not lace his shoes and tomorrow and thereafter does lace his shoes is a different person. You remember when we were discussing the reconstruction of experience it was brought out that henceforth this boy is more independent, more a self-directing person. He not only can and does lace his shoes, but he now is called upon to consider hours and bells in a way and with a responsibility new to him. Having greater responsibility... (t)he moral world thus opens a little wider to him. He is in sober fact more of a person.

While it is true a young child derives great satisfaction from new accomplishments, it is also true that in "sober fact" Kilpatrick has extended this accomplishment (the tying of shoelaces) into the realm of the ridiculous. But even more important Kilpatrick has missed the very essence of Dewey's reconstruction of experience. Kilpatrick has emphasized the immediate, the mechanical, the short-term, the practical; while for Dewey it was the reflective, the intellectual, the logical, the analytical which instrumentally transformed those former beyond their present gross states to a higher level of experience. This was the transformation, not the accomplishment of a particular task. See Wm. Heard Kilpatrick, Foundations of Method (New York: The Macmillan Company, 1931), p. 281.

19. Dewey, Logic, p. 112. The emphasis here upon hypotheses being developed within a logically integrated conceptual framework is an important one for Dewey. It is a key part of his definition of pragmatism, and the very part overlooked by those who wish to define pragmatism in terms of practical expediency. In the Preface to his Logic Dewey says the proper interpretation of pragmatism will include

> ... the function of consequences as necessary tests of the validity of propositions, provided these consequences are operationally instituted.

This last phrase means the consequences must be a direct and desired result of the propositions (or hypotheses) in question. Actions that don't develop from logical and principled structures are not (for Dewey) consequences: they are happenstances.

20. This last phrase about the disciplining or training of the mind, while from Dewey (How We Think, 1910, p. 78), is easily open to a non-Deweyan interpretation. Many educators, and/or educational theorists, tacitly accept the notion of a "mind" as something like a "soul". It is a particular thing, located somewhere in the body, and susceptible to various forms of conditioning. Thus memorization, strain, mental exercise, or an abundance of facts, are all important facets of training. For Dewey the mind is not such a thing; it is merely a convenient term to describe the encompassing whole of man's mental activities. Thus mind is really the summation of reflective habit carried out in practical activity. For Dewey the mind is trained as the individual does habitually operate in a reflective manner; and towards this end he needs to have the opportunity and the training in selecting his own ends. The teacher or adult can enter into this process with the student, but he can never do it for the student.

21. Dewey, Logic, p. 534. See also, p. 452.

22. Dewey gives a variety of such applications in the fourth section of his Logic. One such involves the death of a man under circumstances unusual enough to cause perplexity or doubt. At the gross stage of inquiry the finding of a gun and empty bullet chamber would lead to the tentative assumption of murder. This tentative assumption would itself direct inquiry away from the immediate object of the dead man into considerations of psychological motive, into the field of ballistic studies, into questions of causality and temporality. All these areas have their own ordered structures which would either help develop keener perceptions (and conceptions) about the case under study, or at least show areas needing further refinement. Thus a bullet entering the body would not necessarily have been the cause of death (a natural gross assumption) unless the bullet injured or destroyed a natural organ, and unless the sequence of events was of a definite chronology and temporality. And, of course, who fired the bullet and why would become extremely important in assessing motives. Here inquiry into a particular death is expanded into more generalized inquiry about the nature of death, concepts of causality and temporality, the nature of law, and the nature of motivation. All of this, in turn, leads to closer observation, the creation of new areas of study, as well as new knowledges in old areas, and even to a refinement of the inquiry process itself. See Dewey, Logic, pp. 445-449; and most any national newspaper for the events surrounding the Attica, New York prison uprising in early September, 1971. The latter provides a dramatic instance of Dewey's hypothetical example, especially the primary assumption that the prisoners had murdered the guards.

23. Ibid., p. 265 ff.

24. Thomas Kuhn, The Structure of Scientific Revolutions (Chicago: The University of Chicago Press, 2nd edition, 1970), p. 24.

25. As Kuhn points out the student preparing for a scientific career rarely studies directly the concepts, laws, or theories governing his area. Rather his acquaintance with these is peripheral - only as they are needed to justify a new way of solving problems. Thus he says:

> ...the process of learning a theory depends upon the study of applications, including practice problem-solving with both pencil and paper and with instruments in the laboratory ... (S)cientists ... are little better than laymen at characterizing the established bases of their field, its legitimate problems and methods. (page 47).

26. Joseph Schwab, "What Do Scientists Do?," Behavioral Science, Vol. 5, (1960); "The Practical: Arts of Eclectic," School Review, Vol. 79, No. 4, (August 1971). Schwab consistently uses the British form "enquiry" for the American "inquiry."

27. Schwab, "What Do Scientists Do?," p. 1. While Kuhn deliberately separates the natural sciences from all else, especially the social sciences (Preface), Schwab deliberately tries to unite them, asserting ("The Practical", pp. 531-532) there to be inquiry patterns common to the sciences. However, in the same article (p. 504) he does state that "the behavioral sciences are marked by the coexistence of competing theories." For my own purposes I have

accepted Kuhn's view about the natural sciences and Schwab's about the social ones, with a marked separation between them.

28. These five patterns of inquiry (or enquiry) are taken from Schwah's "What Do Scientists Do?," pp. 3 - 12.

29. Dewey, How We Think (1933, 1971), p. 84.

30. See for example Clarence Karier, "A Quest for Orderly Change," (unpublished manuscript).

31. Dewey, How We Think (1933, 1971), p. 267.

32. John Dewey, "Experience, Knowledge and Value: A Rejoinder," in Paul A. Schilpp, editor, The Philosophy of John Dewey (New York: Tudor Publishing Company, 1951), p. 526.

33. Ibid., p. 563.

34. For more on the impracticality of Dewey's model as a working paradigm for science, and on the difficulty of defining scientific inquiry, see: Marshall D. Herron, "The Nature of Scientific Enquiry," School Review, Vol. 79, No. 2 (February 1971), and Joseph Schwab, "The Structure of the Natural Sciences," in G.W. Ford and L. Pugno, editors, The Structure of Knowledge and the Curriculum (Chicago: Rand McNally and Co., 1964).

35. Dewey, How We Think (1933, 1971), p. 73 for the first quote, p. 35 for the second.

36. Ibid., p. 34 for the separated quote, p. 30 for the one in the body of the paragraph.

37. What is being dealt with in this paragraph is a distinction between education and training - a distinction many behavioral objectivists do not make - with the former being more general and personal while the latter is specific and impersonal. In this regard it is interesting to note that recent work done with rats shows that providing them with personal contact and a structurally enriched and varied environment the weight of their brain increased, as did their metabolic activity. Further, these researches, citing Harlow and his work with monkeys, said that early specific training in problem solving actually had a deleterious effect on the monkeys later on - they were less able to deal with new and changing situations. While all sorts of caveats should be issued about transforming remarks made about animals to human situations (especially by one objecting to behaviorism) these finding do follow along with Dewey's notion about experience at the early stages of life needing to be general and varied. It also fits in with his concept of maturity needing time and personal involvement; one cannot be trained to be mature.

38. Dewey, The Sources of a Science of Education, p. 54. This change in emphasis is not to deny subject matter a place in the educational model; in fact, it is to integrate subject matter with the thinker (student) so that each undergoes modification during the inquiry process. In this sense the subject

matter is more fully integrated within the system than previously when it remained an end apart from the actual means of learning.

39. Ibid., pp. 54-55.

40. The phrase construction of choice is here used to distinguish between choices given and those made. The former are always among alternatives already developed in terms of their consequences; the latter are open-ended and hence constructed (or continually re-constructed) over periods of time as new means and consequences emerge. This sense of choice is highly personal and it involves the ability to synthesize, to create, to imagine, to construct. As such it is very threatening to any ordered or closed system, for it is based on the positive aspects of change and continual re-evaluation of ends-in-view. John Mann, following the reasoning of Paulo Freire, has written well on this point, arguing persuasively that such a concept of choice is so threatening to the institutionalized structuring of schools that schools (in anything like their present form) are forced to resist and deny such choice. See his "The Student Rights Strategy," Theory into Practice (in press, 1972).

41. This dual emphasis on carrying theory into practice and also structuring the process that it will be a controlled carrying forward is very important to Dewey. As he says:

> ... verification of an idea or theory is not a matter of finding an existence which answers to the demands of the idea or theory, but is a matter of the systematic ordering of a complex set of data by means of the idea or theory as an instrumentality. (Logic, p. 418).

(and):

> ... all logical forms... are instances of a relation between means and consequences in properly controlled inquiry, the word 'controlled' in this statement standing for the methods of inquiry that are developed and perfected in the process of continuous inquiry. (Logic, p. 11).

42. Dewey, How We Think (1933, 1971), p. 147.

43. Freire defines the word "praxis" as "reflection and action upon the world in order to transform it." See Paulo Freire, Pedagogy of the Oppressed, (New York: Herder and Herder, 1971), p. 36. See also Richard Bernstein, Praxis and Action (Philadelphia: University of Pennsylvania Press, 1971).

44. Joseph Schwab, "The Practical: A Language for Curriculum," School Review, Vol. 78, No. 1, (November 1969), p. 1. The "cause" and "cure" phraseology here is in accord with Schwab's preference for medical metaphors.

45. Here Dewey's analogy of a map is very appropriate. A map is "a summary, an arranged and orderly view" of previous situatons. It can serve to aid an individual's own future situations, by providing him with direction, control and foresight he might otherwise not have. But a map is still an abstraction; it is of a qualitatively different order than the actual experience of hiking along a trail. One could use the map for the development of practical

experiences in a hiking situation, but he could not substitute map reading for hiking. See John Dewey, The Child and the Curriculum (Chicago: University of Chicago Press, 1902, 1956), p. 20.

46. Joseph Schwab, College Curriculum and Student Protest (Chicago: University of Chicago Press, 1969), pp. 116-117.

47. This short and generalized analysis of Schwab's thinking is the result of my own synthesis of three of his works - the two articles on "The Practical" (School Review; November 1969 and August 1971), and his book College Curriculum and Student Protest. Schwab has demonstrated a fine understanding of Dewey's theory of inquiry in his "The 'Impossible' Role of the Teacher in Progressive Education," School Review, Vol. 67, No. 4, (Summer 1959).

48. Schwab, College Curriculum and Student Protest, pp. 61 - 65.

49. I am using the word "transformed" here to indicate that the student via this process will not merely find a different "right answer," but will actually proceed in a qualitatively different manner - he will explore alternatives and the assumptions on which those alternatives are based before he makes a decisional statement.

50. Dewey, Logic, p. 5.